

ENVIRONMENTAL BARRIER COATING FOR SILICON-CONTAINING SUBSTRATES AND PROCESS THEREFOR

Abstract

A protective coating for use on a silicon-containing substrate, and deposition methods therefor. The coating has a barium-strontium-aluminosilicate (BSAS) composition that is less susceptible to degradation by volatilization and in corrosive environments as a result of having at least an outer surface region that consists essentially of one or more stoichiometric crystalline phases of BSAS and is substantially free of a nonstoichiometric second crystalline phase of BSAS that contains a substoichiometric amount of silica. The coating can be produced by carrying out deposition and heat treatment steps that result in the entire coating or just the outer surface region of the coating consisting essentially of the stoichiometric celsian phase.